Location ID: 100-A-182 Field Representative(s): J. Kaszuba

Northing: 223399.14 Easting: 416627.43

Date Started: 08 May 1989 Date Completed: 30 May 1989

Drilling Method: Mud/Air-Foam Rotary Drilling Contractor: Larjon

Driller: T. Crawford

Total Depth Borehole: 221' Total Depth Well Casing: 197.7'

Total Depth Surface Casing: 65 feet

Diameter Well Casing: 4-inch Diameter Surface Casing: 10-inch

Length of Bottom Blank: 5.3'

Type of Screen: regular strength 0.02 slot

Screen Interval: 182.0' to 192.4'

Water First Detected: 180' Water Level Open Borehole: 171.10' (top of surface casing)

Water Level Cased Borehole: 173.86' (I.C.)

Bentonite Gel for mud drilling: 10 sacks

Quik-Foam Use: 0.5 gallons

Estimated Water Use:
3830 gal. used during drilling
3730 gal. recirculated to surface
100 gal. lost to borehole

Well Casing:

4in x 3ft SCD 40 PVC:	1		stock SS centralizers:	0	
4in x 5ft SCD 40 PVC:	0		custom SS centralizers:	1	set
4in x 10ft SCD 40 PVC:	9		4"x2' SS locking riser:	1	
4in x 20ft SCD 40 PVC:	3		4" SS locking cap:	1	
Total SCD 40 PVC pipe:	153	ft	4" SS female cap:	1	
4in x 3ft SCD 5 SS pipe:	0				
4in x 5ft SCD 5 SS pipe:	1		4in x 5ft SCD 10 SS pipe:		
4in x 10ft SCD 5 SS pipe:	3		4in x 10ft SCD 10 SS pipe:		
4in x 20ft SCD 5 SS pipe:	0		4in x 20ft SCD 10 SS pipe:		
Total SCD 5 SS pipe:	35	ft	Total SCD 10 SS pipe:	0	ft

Well Completion:

100# bags 16/40 sand:	4	bags
100# bags 10/20 sand:	0	bags
100# bags 8/14 sand:	0	bags
100# bags 8/20 sand:	25	bags
94# bags cement:	52	bags
5 gal. buckets bentonite:	5	buckets
50# bentonite powder:	7.5	bags

Surface Casing:

94# bags cement:	35	bags
50# bags bentonite powder:	4	bags
Grout	0	bags

Pertinent Field Notes:

05/08/89 Steam clean and mobilize mud rotary equipment. Drill pilot hole; 12 1/4-inch tricone bit, 0'-40'. Water usage = 1400 gal; mud usage = 10 sacks of gel. - Kaszuba

05/09/89 Drill pilot hole 40'-65'. Ream with 16" tricone bit 0'-65'. Install 10" x 65' of surface casing. Use 530 gal. of water. - Kaszuba

05/10/89 Demobilize mud rotary equipment. Grout surface casing to surface. Steam clean and mobilize air-foam rotary equipment. - Kaszuba

05/11/89 Drill with air-foam rotary, 9 7/8-inch tricone bit, 65'-215'. Add 58' of drill collars and stabilizer behind bit in anticipation of dense, dipping bedrock. Encounter bedrock at 87'. Bedrock consists of interbedded calcareous sandstone, sandy limestone and shaly limestone (Panther Seep Formation) and is similar to sequence observed in 300-D. Alluvium is unsaturated, bedrock is certainly unsaturated to 156'. Water first encountered during drilling at 180'. Borehole produces approximately 2 to 5 gpm between 180' and 215'. Monitor both compressors during drilling. Use 1800 gal. of water and 1/2 gal of Quik-Foam. - Kaszuba

05/12/89 Static = 271.10' (below top of surface casing). Bottom of borehole = 207.10' (below top of surface casing), therefore, 7.9' of slough. core with 4" x 10' Christianson core barrel from 215'-221', obtain 100% recovery. Lithology includes shaly and micritic, fractured limestone (Panther Seep Formation). Use 100 gal. of water and a negligible amount of Quik-Foam. Monitor forward compressor. - Kaszuba

05/ 15/89 Static = 271.10' (surface casing). Bottom of borehole at 206.1' (surface casing), therefore, 14.9' of total slough after coring. Slough filled in the 6' x 4" core hole and **8.9'** of the 10" borehole. SW Surveys (P. Akins) logs the borehole with a full suite of geophysical logs plus drift. Equipment problems with electric tool resulted in longer logging time. Install bottom plug, well casing and filter pack to above screen. Borehole consumed 150% more sand than anticipated; the excess sand filled fractures within the completion zone. - Kaszuba

05/ 16/89 Install balance of filter pack, top plug and filler sand. Will mix grout with a larger proportion of bentonite than normal. This mixture will take longer to cure, therefore, reducing maximum curing temperatures of grout. Will also install grout in two stages. These two steps will prevent the grout from deforming the PVC. Load first installment of grout, 27 cement and 4 gel (7.3% bentonite by weight). Fan belt breaks on cement mixer, will fix and install first stage tomorrow. - Kaszuba

05/ 17/89 Put new fan belts on cement mixer. Install first stage of grout. Insert bailer and withdraw, no grout invasion. - Kaszuba

05/ 18/89 Sound top of grout (installed yesterday) at 89.2' (below top of surface casing). Borehole will require a load of 25 cement and 3.5 gel to bring grout to surface. Load, mix and pour this amount as part of the 1oad for surface casing at ST-1. - Kaszuba

05/ 19/89 Sound top of grout (installed yesterday) at 4.4' (surface casing). - Kaszuba

05/26/89 Development set 1/2 hp pump at 180'. Static water level at 173.9'. Developed well at sustained pump rate of 10 gpm until parameters stabilized and turbidity dropped below 5 NTU. Approximately 600 gallons pumped. Pulled pumped and secured well.

05/30/89 Poured concrete pad and set brass cap. Well completed.